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Randy Apfelbeck
Montana Department of Environmental Quality

Strategy for Implementing Montana's Wetland Rapid Assessment Method (Draft)

Environmental Setting/Problems

Wetland and riparian areas provide many benefits to local communities and landowners such as maintaining water quality and moderating floods, and are highly prized for their economic values such as for livestock production and recreation. They also provide some of the most productive natural resources found on private and public lands and play a significant role in providing habitat for aquatic life. In fact, riparian-wetland areas make up less than 4% of land surface in Montana but provide essential habitat for 60% of species identified as having the greatest conservation need (2005 Montana Comprehensive Fish and Game Conservation Strategy).

Montana's citizens are concerned about the rate and amount of wetland loss and degradation and about the lack of data available to assess existing wetland conditions and cumulative impacts (1997 Draft Montana Wetland Conservation Strategy). The Montana Department of Environmental Quality (DEQ) is aware of these concerns and recognizes that the restoration and protection of Montana's wetlands is becoming increasingly complicated and that we would greatly benefit from a well-coordinated effort between researchers, state, tribal and federal agencies, nonprofit groups and landowners. We also are aware that our ability to facilitate the protection and restoration of Montana's wetlands is dependant on our having a better understanding of these resources. We must know their locations and conditions, and the stressors that are impacting them.

The U.S. EPA has identified the development of a comprehensive wetland monitoring and assessment program as a top priority to determine the causes, effects and extent of pollution to wetland resources and to improve pollution prevention, reduction and elimination strategies (Fennessy et al. 2004). A primary goal of such programs is to report on the ambient condition of the wetland resource. Strategies for designing an effective wetland monitoring program are described in what is known as a "three-tier framework" for wetland monitoring and assessment (Fennessy et al. 2004). This approach breaks assessment procedures into three levels that vary in intensity and scale, ranging from broad landscape level assessments and mapping (Level 1), rapid field assessments (level 2) and intensive assessments (Level 3). Each level can be used to validate and inform the others, for example data collected with a rapid assessment method can be used to validate and refine remote, landscape level techniques (Fennessy et. al. 2004). The development of these wetland assessment methods, and in particular a wetland rapid assessment method, is a prerequisite to the accomplishment of state program objectives including reporting on wetland status and trends and identifying wetlands that need restoration and protection (USEPA 2005a).

Montana currently lacks a comprehensive wetland monitoring and assessment program. As a result the State is unable to evaluate the status and trends of wetland quantity and quality, which would allow managers to better assess needs for implementation of wetland restoration and protection. For this reason, the U.S. EPA has provided Montana DEQ a considerable amount of funding over the past several years to develop wetland assessment procedures and a wetland monitoring and assessment strategy. To help meet this need, the DEQ, Montana Watercourse and the Montana Natural Heritage Program (MTNHP) collaborated in 2004 and 2005 to develop the Montana Wetland Rapid Assessment Form (MRAM). The goal of the project was to develop a form, database and guidebook that both the professional and volunteer community could use to assess wetland conditions and the probable stressors that are impacting them, and to develop a strategy for using the information to prioritize wetland protection and restoration.

MRAM Implementation Strategy: Partner with the MTNHP to meet multiple monitoring and assessment objectives

Montana is currently in the process of developing a monitoring program to address the publics concerns and to meet the objectives of Section 305(b) of the Clean Water Act, which requires States to monitor, assess and report on the water quality status and trends of all state waters (40 CFR 130.4(a) and 130.8(b)(1))**.** We intend to initiate the implementation of the wetland comprehensive monitoring and assessment program through evaluating the quantity and quality of wetlands located within the Gallatin, Flathead and Bitterroot valleys where wetlands are considered to be most at risk due to recent development pressures. The MRAM would be used to help ground-truth the wetland classification, identify probably stressors and to assess the quality of the wetlands.

The MTNHP is currently funded by an EPA wetland grant to map and classify wetlands within the Gallatin, Flathead and Bitterroot Valleys from 2006-2008. This effort will include drive-by assessments to ground-truth wetland mapping and classifications that were derived from remote sensing, and on-site visits to describe wetland vegetation communities. The on-site visits will include two levels of effort. A more general characterization will be used to classify the vegetation communities of the most common wetland types found on the landscape and a more rigorous characterization of the vegetation communities will be performed for wetlands that are identified by the MTNHP as being either high quality or unique.

The MRAM will be used to assess all sites where on-site field investigations occur to classify wetland vegetation communities. The assessment will be conducted by a MTNHP field biologist using a hard-copy datasheet and later entered into our database by a DEQ intern. The datasheets will be used to record the wetland classification and wetland condition, and the data collected will be used to investigate relationships between observed disturbances (impacts and stressors) and the quality of the wetland vegetation communities.

The offices of the U.S. Forest Service - Region 1, USGS Amphibian Research and Monitoring Initiative, BLM, EPA, Montana Department of Fish, Wildlife and Parks, and Plum Creek Timber Company have also funded MTNHP to conduct amphibian surveys. The amphibian survey includes a statewide study design which stratifies sampling into different ecoregions across Montana (Maxell 2005). Within each ecoregion a census of all lentic wetlands is conducted within randomly selected subwatersheds (6^{th} Level HUCs). This allows the status of individual wetlands to be evaluated as well as the status of wetland habitats across the entire watershed (Maxell 2005).

DEQ intends to coordinate with the MTNHP amphibian crew by partially funding an intern to assist them in using the MRAM to simultaneously assess wetland conditions while they are conducting amphibian surveys. The two different monitoring efforts will compliment one another by combining response variables that generally have low strength of inference with regard to underlying processes at a give site (i.e., amphibian surveys) with response variables with limited spatial inference, but can be used for strong inference of processes that underlie observed patterns (e.g., habitat assessments and MRAM**)** (Maxell 2005). It also provides a cost-effective approach for monitoring that meets multiple objectives.

All wetland condition data collected by the amphibian survey crew will be entered into a Microsoft Access database by a DEQ intern. This effort will be used to demonstrate how data collected using the MRAM can be used for watershed planning purposes by following approaches that are similar to what the MTNHP used to evaluate how natural and anthropogenic disturbances impact amphibian communities (Maxell 2004a-b; Maxell 2006). Furthermore, the MRAM database and photographs can be linked to newly developed web applications at MTNHP to provide land managers across Montana easy access to this information in order to facilitate on-the-ground protection for wetlands. Therefore, the MRAM could become a valuable assessment tool for on-the-ground wetland protection and restoration due to the fact that we are using the form to assess a large number of wetlands using watershed-based sampling units and frameworks and because the information will be easily assessable to managers through web-based reporting.

The MTNHP program has also included the use of the MRAM within proposals that were recently submitted to the U.S. EPA and the Clark Fork Natural Resource Damage Program. The proposal submitted to U.S. EPA includes a strategy to combine the MRAM with a localized landscape-level assessment to predict wetland conditions. MTNHP plans to draw on intensive site-level assessments that they have conducted across the state, rapid assessments carried out by DEQ and MTNHP staff using MRAM, and PFC assessments done by the BLM as initial "training data" to identify the landscape-level factors in a 300 m buffer area that appear to predict site-level condition.

The MRAM and supporting information has been placed on DEQ's website at http://www.deq.mt.gov/wqinfo/Wetlands/Index.asp. It is our hope that providing this information on our website will benefit other states and organizations that are also attempting to develop wetland monitoring and assessment methods and strategies and

that it will trigger constructive feedback that will lead to the improvement of the MRAM in the future. We are also encouraging Montana DEQ to further develop its strategy to monitor and assess attainment of no-net-loss goals by also addressing the *quality* of the nation's wetlands (Adamus 1998; Zinn 2001). We are doing this by encouraging our programs to follow recommendations from the National Academy of Public Administration and U.S. EPA to use a watershed approach to develop a cost-effective strategy that enhances the state's capacity to assess, restore and protect the quality of our aquatic resources by integrating the monitoring, assessment and restoration of wetlands with the monitoring, assessment and restoration of streams and lakes (71 FR 15718; NAPA 2002; U.S. EPA 2003; U.S. EPA 2005a-c).

Comparison of the MRAM to the Montana Department of Transportation (MDT) Wetland Assessment Method

Over the past two years there has been considerable debate about the differences and similarities between the MRAM which is used to assess ecological condition and the MDT Wetland Assessment Method which is used to assess functions and values. Several agencies have inquired about the need for having two different wetland assessment methods. I will attempt to address these concerns with the following explanation.

Function and value and ecological *condition* assessments convey different types of information about a wetland; they also fit differently into the regulatory framework (Hatfield et al. 2004). Functions and values generally focus on the services that a wetland provides to the environment, such as floodwater storage, sediment retention, water quality improvement, etc. or the uniqueness of a site. Functions are self-sustaining properties of a wetland ecoregion that exist in the absence of society and relate to ecological significance without regard to human values (Burglund 1999). Values are benefits that derive from either one or more functions and the physical characteristics associated with a wetland (Burglund 1999). The value of a given wetland function, or combination of functions is based on human judgment of worth, merit, importance, or quality attributed to those functions (Burglund 1999). The COE Regulatory Division must consider impacts to wetland functions and values when evaluating 404 permit application (Burglund 1999).

The *MDT Wetland Assessment Method* is used to assess wetland functions and values as a means to assigning wetland ratings to facilitate avoidance priorities with respect to evaluating *proposed* wetland disturbances and mitigation projects (Burglund 1999).

For wetland *condition* assessments the indicators and associated metrics reflect the ecological factors that define wetlands (e.g., hydrology, vegetation, soils and water quality) and how those factors respond to human-disturbance (i.e., stressors) (EPA 2005a). In particular, environmental indicators are used in making determinations of whether wetland function is changed or lost due to *past or current* anthropogenic disturbances to the point where it affects wetland condition, causing degradation of wetland water quality and beneficial uses such as aquatic life, including wildlife habitat (EPA 2005a). However, a wetland that has high functional value may be low quality

from a wetland condition perspective. For example, wetlands in an urban setting may provide high functional value to the surrounding landscape but be quite degraded from a quality perspective (Hatfield et al. 2004).

Wetland condition assessments generally provide a single rating or score that shows where a wetland falls on the continuum ranging from full ecological integrity (or least impacted condition) to highly degraded (poor condition) (EPA 2005a). The MRAM is intended to be used as a field-based screening level assessment tool to assess wetland condition and identify potential stressors, and was designed to be used in combination with a landscape level assessment (Level-1) to help identify and prioritize wetlands within a watershed or region that are at risk and need additional protection or are disturbed and need restoration (DEQ 2005). The form was also designed to help meet EPA's long-term goal to enhance the state's capacity to implement an integrated monitoring framework by including the same assessment questions within the MRAM that are used by our stream assessment program to assess riparian conditions (i.e, NRCS Riparian Assessment Form) (71 FR 15718).

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